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Name of Work	:	1. Improvements to Roads and Drains From Hegdenagar petrol bunk to MCECHS park in Ward No. 06 2. Improvements to Roads and Drains in Hegdenagar and Surrounding areas in Ward No. 06 3. Improvements to Roads and Drains in Munivenkatappa Layout Nagawara in Ward No. 06 4. Drilling of Borewells and Maintance in Ward No.06
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, Basaveshwar Nagar Bangalore
Contractor	:	HONNAPPA MURTHY
Date of Testing	:	25-06-19
Type of Mix	:	WMM
Sample I/D	:	WMM 3

GRADATION FOR WMM (As per MORT&H 400-11)			
Sample Location:	At plant	**Date of Sampling:**	25-06-19
		Date of testing:	25-06-19
Type of material & Purpose:	WMM	**Oven Dry Wt.(gms):**	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	300	300	3.00	97.00	95-100
22.4	2500	2800	28.00	72.00	60-80
11.2	2600	5400	54.00	46.00	40-60
4.75	1245.0	6645	66.45	33.55	25-40
2.36	800.0	7445	74.45	25.55	15-30
0.6	600.0	8045	80.45	19.55	8.0-22.0
0.075	1300.0	9345	93.45	6.55	0-8
Pan	655.0	10000			
Total	10000.0				

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Project	1. Improvements to Roads and Drains From Hegdenagar petrol bunk to MCECHS park in Ward No. 06 2. Improvements to Roads and Drains in Hegdenagar and Surrounding areas in Ward No. 06 3. Improvements to Roads and Drains in Munivenkatappa Layout Nagawara in Ward No. 06 4. Drilling of Borewells and Maintance in Ward No.06	
Client	Bruhat Bengaluru Mahanagara Palike	
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore	
Contractor	HONNAPPA MURTHY	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	Date:	**5/7/2019**
Layer no. or level	WMM I layer	
Depth of hole	250mm	
Field density:	1	2
Wt. of wet material from hole (Ww) gms.	6201	6200
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9700	9700
Wt. of sand in cone (w3) gms.	855	855
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3443	3445
Bulk density of sand (γs)gm/cc	1.31	1.31
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.36	2.36
Moisture meter reading(moisture content)	12.20	12.20
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.10	2.10
MDD	2.14	2.14
OMC	13.50%	13.50%
% compaction obtained	98.26	98.19
% compaction required	98%	98%

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Client	Bruhat Bengaluru Mahanagara Palike	
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore	
Contractor	HONNAPPA MURTHY	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	Date:	**5/7/2019**
Layer no. or level	WMM I layer	
Depth of hole	250mm	
Field density:	1	2
Wt. of wet material from hole (Ww) gms.	6230	6218
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9715	9745
Wt. of sand in cone (w3) gms.	838	849
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3447	3406
Bulk density of sand (γs)gm/cc	1.31	1.31
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.37	2.39
Moisture meter reading(moisture content)	12.10	12.10
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.11	2.13
MDD	2.14	2.14
OMC	13.50%	13.50%
% compaction obtained	98.70	99.69
% compaction required	98%	98%

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Client	Bruhat Bengaluru Mahanagara Palike	
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore	
Contractor	HONNAPPA MURTHY	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	Date:	**5/7/2019**
Layer no. or level	WMM I layer	
Depth of hole	250mm	
Field density:	1	2
Wt. of wet material from hole (Ww) gms.	6255	6198
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9715	9745
Wt. of sand in cone (w3) gms.	835	842
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3450	3413
Bulk density of sand (γs)gm/cc	1.31	1.31
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.38	2.38
Moisture meter reading(moisture content)	12.10	12.10
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.12	2.12
MDD	2.14	2.14
OMC	13.50%	13.50%
% compaction obtained	99.01	99.17
% compaction required	98%	98%

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Project	1. Improvements to Roads and Drains From Hegdenagar petrol bunk to MCECHS park in Ward No. 06 2. Improvements to Roads and Drains in Hegdenagar and Surrounding areas in Ward No. 06 3. Improvements to Roads and Drains in Munivenkatappa Layout Nagawara in Ward No. 06 4. Drilling of Borewells and Maintance in Ward No.06
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	HONNAPPA MURTHY

AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Proposed Use	WMM	**Date of Sampling**	**11/7/2019**
Sample Location	**At plant**	**Date of Testing**	**11/7/2019**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	376.00	350.00	380.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	294.00	265.00	300.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	82.00	85.00	80.00	
4	Aggregate Impact Value (%)	(Wc/Wa)* 100	21.81	24.29	21.05	
5	Average Aggregate impact value	(%)	22.38			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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Name of Work	:	1. Improvements to Roads and Drains From Hegdenagar petrol bunk to MCECHS park in Ward No. 06 2. Improvements to Roads and Drains in Hegdenagar and Surrounding areas in Ward No. 06 3. Improvements to Roads and Drains in Munivenkatappa Layout Nagawara in Ward No. 06 4. Drilling of Borewells and Maintance in Ward No.06
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, Basaveshwar Nagar Bangalore
Contractor	:	HONNAPPA MURTHY
Date of Testing	:	11/7/2019
Type of Mix	:	WMM
Sample I/D	:	WMM 4

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	At plant	Date of Sampling:	11/7/2019
		Date of testing:	11/7/2019
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	400	400	4.00	96.00	95-100
22.4	2400	2800	28.00	72.00	60-80
11.2	2500	5300	53.00	47.00	40-60
4.75	1420.0	6720	67.20	32.80	25-40
2.36	800.0	7520	75.20	24.80	15-30
0.6	800.0	8320	83.20	16.80	8.0-22.0
0.075	950.0	9270	92.70	7.30	0-8
Pan	730.0	10000			
Total	10000.0				

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Name of Work	:	1. Improvements to Roads and Drains From Hegdenagar petrol bunk to MCECHS park in Ward No. 06 2. Improvements to Roads and Drains in Hegdenagar and Surrounding areas in Ward No. 06 3. Improvements to Roads and Drains in Munivenkatappa Layout Nagawara in Ward No. 06 4. Drilling of Borewells and Maintance in Ward No.06
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, Basaveshwar Nagar Bangalore
Contractor	:	HONNAPPA MURTHY
Date of Testing	:	11/7/2019
Type of Mix	:	WMM
Sample I/D	:	WMM 5

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	At plant	Date of Sampling:	11/7/2019
		Date of testing:	11/7/2019
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	350	350	3.50	96.50	95-100
22.4	2600	2950	29.50	70.50	60-80
11.2	2500	5450	54.50	45.50	40-60
4.75	1500.0	6950	69.50	30.50	25-40
2.36	950.0	7900	79.00	21.00	15-30
0.6	715.0	8615	86.15	13.85	8.0-22.0
0.075	675.0	9290	92.90	7.10	0-8
Pan	710.0	10000			
Total	10000.0				

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Name of Work	:	1. Improvements to Roads and Drains From Hegdenagar petrol bunk to MCECHS park in Ward No. 06 2. Improvements to Roads and Drains in Hegdenagar and Surrounding areas in Ward No. 06 3. Improvements to Roads and Drains in Munivenkatappa Layout Nagawara in Ward No. 06 4. Drilling of Borewells and Maintance in Ward No.06
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, Basaveshwar Nagar Bangalore
Contractor	:	HONNAPPA MURTHY
Date of Testing	:	11/7/2019
Type of Mix	:	WMM
Sample I/D	:	WMM 6

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	At plant	Date of Sampling:	11/7/2019
		Date of testing:	11/7/2019
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	360	360	3.60	96.40	95-100
22.4	2145	2505	25.05	74.95	60-80
11.2	2159	4664	46.64	53.36	40-60
4.75	2000.0	6664	66.64	33.36	25-40
2.36	1568.0	8232	82.32	17.68	15-30
0.6	425.0	8657	86.57	13.43	8.0-22.0
0.075	800.0	9457	94.57	5.43	0-8
Pan	543.0	10000			
Total	10000.0				

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Client	Bruhat Bengaluru Mahanagara Palike	
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore	
Contractor	HONNAPPA MURTHY	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	Date:	**20-07-19**
Layer no. or level	WMM I layer	
Depth of hole	250mm	
Field density:	1	2
Wt. of wet material from hole (Ww) gms.	6233	6126
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9715	9745
Wt. of sand in cone (w3) gms.	835	842
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3450	3413
Bulk density of sand (γs)gm/cc	1.31	1.31
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.37	2.35
Moisture meter reading(moisture content)	12.10	12.10
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.11	2.10
MDD	2.14	2.14
OMC	13.50%	13.50%
% compaction obtained	98.66	98.02
% compaction required	98%	98%

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Project	1. Improvements to Roads and Drains From Hegdenagar petrol bunk to MCECHS park in Ward No. 06 2. Improvements to Roads and Drains in Hegdenagar and Surrounding areas in Ward No. 06 3. Improvements to Roads and Drains in Munivenkatappa Layout Nagawara in Ward No. 06 4. Drilling of Borewells and Maintance in Ward No.06	
Client	Bruhat Bengaluru Mahanagara Palike	
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore	
Contractor	HONNAPPA MURTHY	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	Date:	**20-07-19**
Layer no. or level	WMM I layer	
Depth of hole	250mm	
Field density:	1	2
Wt. of wet material from hole (Ww) gms.	6185	6255
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9714	9700
Wt. of sand in cone (w3) gms.	855	850
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3431	3450
Bulk density of sand (γs)gm/cc	1.31	1.31
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.36	2.38
Moisture meter reading(moisture content)	12.20	12.20
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.10	2.12
MDD	2.14	2.14
OMC	13.50%	13.50%
% compaction obtained	98.35	98.92
% compaction required	98%	98%

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Client	Bruhat Bengaluru Mahanagara Palike	
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore	
Contractor	HONNAPPA MURTHY	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	Date:	**20-07-19**
Layer no. or level	WMM I layer	
Depth of hole	250mm	
Field density:	1	2
Wt. of wet material from hole (Ww) gms.	6150	6215
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9714	9700
Wt. of sand in cone (w3) gms.	855	850
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3431	3450
Bulk density of sand (γs)gm/cc	1.32	1.31
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.37	2.36
Moisture meter reading(moisture content)	12.20	12.20
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.11	2.10
MDD	2.14	2.14
OMC	13.50%	13.50%
% compaction obtained	98.54	98.28
% compaction required	98%	98%

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Project	1. Improvements to Roads and Drains From Hegdenagar petrol bunk to MCECHS park in Ward No. 06 2. Improvements to Roads and Drains in Hegdenagar and Surrounding areas in Ward No. 06 3. Improvements to Roads and Drains in Munivenkatappa Layout Nagawara in Ward No. 06 4. Drilling of Borewells and Maintance in Ward No.06
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	HONNAPPA MURTHY

AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Proposed Use	WMM	**Date of Sampling**	**23-07-19**
Sample Location	**At plant**	**Date of Testing**	**23-07-19**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	356.00	360.00	375.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	274.00	275.00	295.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	82.00	85.00	80.00	
4	Aggregate Impact Value (%)	(Wc/Wa)* 100	23.03	23.61	21.33	
5	Average Aggregate impact value	(%)	22.66			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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Project	1. Improvements to Roads and Drains From Hegdenagar petrol bunk to MCECHS park in Ward No. 06 2. Improvements to Roads and Drains in Hegdenagar and Surrounding areas in Ward No. 06 3. Improvements to Roads and Drains in Munivenkatappa Layout Nagawara in Ward No. 06 4. Drilling of Borewells and Maintance in Ward No.06
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	HONNAPPA MURTHY

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	WMM		**Proposed Use**	**WMM**
Sample Location	At plant		**Date of Sampling**	**23-07-19**
			Date of Testing	**23-07-19**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	620	85	524	76
16.0	12.5	1130	125	1000	117
12.5	10.0	780	59	750	62
10.0	6.3	620	54	565	46
Total		**3150**	**323**	**2839**	**301**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.25
Elongation Index(%):	10.60
Combined FI+EL (%)	20.86

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Project	1. Improvements to Roads and Drains From Hegdenagar petrol bunk to MCECHS park in Ward No. 06 2. Improvements to Roads and Drains in Hegdenagar and Surrounding areas in Ward No. 06 3. Improvements to Roads and Drains in Munivenkatappa Layout Nagawara in Ward No. 06 4. Drilling of Borewells and Maintance in Ward No.06
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	HONNAPPA MURTHY

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	WMM		**Proposed Use**	**WMM**
Sample Location	At plant		**Date of Sampling**	**23-07-19**
			Date of Testing	**23-07-19**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	610	80	525	75
16.0	12.5	1125	120	1000	115
12.5	10.0	775	60	720	60
10.0	6.3	615	55	565	45
Total		**3125**	**315**	**2810**	**295**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.08
Elongation Index(%):	10.50
Combined FI+EL (%)	20.58

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Name of Work	:	1. Improvements to Roads and Drains From Hegdenagar petrol bunk to MCECHS park in Ward No. 06 2. Improvements to Roads and Drains in Hegdenagar and Surrounding areas in Ward No. 06 3. Improvements to Roads and Drains in Munivenkatappa Layout Nagawara in Ward No. 06 4. Drilling of Borewells and Maintance in Ward No.06
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, Basaveshwar Nagar Bangalore
Contractor	:	HONNAPPA MURTHY
Date of Testing	:	23-07-19
Type of Mix	:	WMM
Sample I/D	:	WMM 7

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	At plant	Date of Sampling:	23-07-19
		Date of testing:	23-07-19
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	398	398	3.98	96.02	95-100
22.4	1989	2387	23.87	76.13	60-80
11.2	2265	4652	46.52	53.48	40-60
4.75	2131.0	6783	67.83	32.17	25-40
2.36	1156.0	7939	79.39	20.61	15-30
0.6	426.0	8365	83.65	16.35	8.0-22.0
0.075	899.0	9264	92.64	7.36	0-8
Pan	736.0	10000			
Total	10000.0				

Consultant's Representative

Asst. Executive Engineer
Project Division
Yelahanka Zone
Bangalore